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Book reviews and notices*

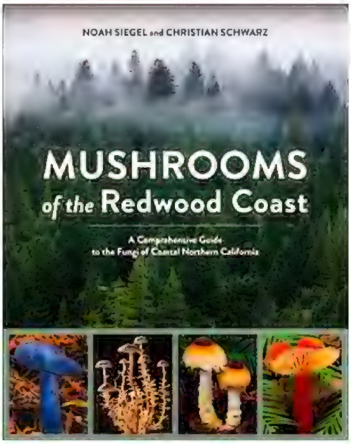
Lorelei L. Norvell

Pacific Northwest Mycology Service, Portland OR 97229-1309 USA

Abstract—Books reviewed include: General—Mushrooms of the Redwood Coast (Siegel & Schwarz 2016); *Basidiomycetes*—The genus *Mycena* s.l. (Arne Aronsen & Thomas Laessøe).

General

Mushrooms of the Redwood Coast—a comprehensive guide to the fungi of coastal northern California. By Noah Siegel & Christian Schwarz. 2016. Ten Speed Press [Crown Publishing Group], Berkeley CA <www.randomhouse.com/crown/tenspeed/>. 608 p. ~855 color photos, ISBN 978-1-60774-817-5 US$35 (soft cover), ISBN 978-1-60774-817-2 $18.99 (e-book)


NOAH SIEGEL and CHRISTIAN SCHWARZ
MUSHROOMS of the Redwood Coast
A Comprehensive Guide to the Fungi of Coastal Northern California

Two and a half decades of sequence analyses have 'steam-rollered' rapid name changes in fungi, often leaving mushroomers and field taxonomists perplexed and decidedly behind the nomenclatural curve. There was a time in the not too distant past that comprehensive regional field guides limited coverage to relatively few species representing the larger and more commonly encountered macrofungi. Fortunately, the recent upsurge of beautifully illustrated and nomenclaturally up-to-date regional field guides (e.g., Trudell & Ammirati 2009, Desjardin & al. 2015) have made life for west coast North American mushroomers a lot easier by including revised nomenclature along with striking photos of less commonly encountered fungi.

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* Book reviews or books for consideration for coverage in this column should be sent to the *Editor-in-Chief* <editor@mycotaxon.com> 6720 NW Skyline, Portland OR 97229 USA.

Mushrooms of the Redwood Coast [advertised by the press as "A comprehensive and user-friendly field guide for identifying the many mushrooms of the northern California coast, from Monterey County to the Oregon border"] is a glorious addition to this new pantheon of field guides. The print copy is a hefty 24 × 19 × 3.8 cm and provides full treatments of over 750 species and references hundreds more. Unfortunately the attractive paper cover on my copy soon separated from the glue strip on the front page, foreshadowing a duct-tape repair in the not too distant future. Glossy inside pages display the sharp clear photos to their best advantage.

The 22-page introductory text is necessarily brief but more than adequately covers the basics. A one-page introduction entices the non-initiated to further coastal forest explorations and precedes an outline of mushroom morphology, fungal ecology, a life cycle diagram, and human-fungal relationships. Six pages devoted to the 'redwood coast' offer a map of the five regions (Far North Coast; North Coast; San Francisco Bay Area & East Bay Hills; Santa Cruz & Peninsula Mountains; and Monterey County and southernmost redwoods) and tree descriptions and superb photos of the ectomycorrhizal northern conifers [Sitka spruce, western hemlock, grand fir], ectomycorrhizal hardwoods [3 live oaks, two deciduous oaks, tanoak, chinquapin, madrone, manzanita], widespread ectomycorrhizal conifers [Douglas-fir, five pine species], and non-ectomycorrhizal trees [the coast redwood itself (!), Monterey cypress, California bay laurel). Two and a half pages are dedicated to collection practices: finding, collecting, and identifying mushrooms, making spore prints, a list of necessities (basket, field notebooks, tackle boxes, waxed paper bags [for which I would substitute aluminum foil], hand lenses, KOH, camera, and food dehydrator), making collections, photographic tips, and collecting for the table. The introduction ends with an excellent overview on "How to read the species descriptions" (the sort of instruction too often ignored by eager would-be identifiers), "General format of the species descriptions" (see below), an explanation of "How to use the pictorial key to the major sections" followed by the six-page pictorial key itself.

Photos paired with descriptions serve as the sole key to species, making this volume definitely geared to the browse-and-point mode of identification. While I do miss more formal keys to species, participation in enough forays and mushroom collecting expeditions suggests that a photo matching routine is perhaps the wisest and most efficient route for would-be identifiers lacking microscopes and reagents—particularly when so many run into dead ends using written keys. The pictorial key is based on visual appearance, primarily stature and spore print color. Given the rapid name changes and generic shifts, this works relatively well, although my 'generically' trained brain sometimes found itself confused at discovering a species in one section I anticipated in another. The authors sub-divide some of the more unwieldy sections: for example, the notorious 97-page 'white-spored multitude' (divided pictorially into 'large' vs. 'small') is synoptically apportioned into groups A–N, while the well-populated bolete section is helpfully sorted according to its 16 long-accepted (*Boletus, Leccinum, Suillus*) and quite recent (*Butyriboletus? Rubroboletus?*) genera. The other 27 sections include chanterelles & gomphoids; *Amanita; Cystoderma* + *Cystodermella; Lepiota* & allies; *Agaricus* + *Melanophyllum;* dark-spored mushrooms; brown-spored decomposers; mycorrhizal brown spored mushrooms (3 sections: *Inocybe, Hebeloma, Phaeocollybia*); *Cortinarius; Entoloma* (2 sections: large, small)*; Pluteus* and allies; *Russula; Lactarius;* waxy caps (2 sections: I, II); pleurotoids; gilled boletes; polypores and allies; shelflike, conklike, and rosette-forming polypores; crusts; toothed; corals; clubs; puffballs, earthballs & earthstars; stinkhorns; bird's nests; truffles; jellies; morels, false morels & elfin saddles; and cup fungi. I was pleased to see a gratifyingly large number of small to tiny mushrooms over which I have puzzled for years. The species represented seem comprehensive, although one local forayer has observed that as the authors collected during California's recent and very long drought, there are undoubtedly a great many species they never had the opportunity to capture. Nonetheless I was personally charmed by the inclusion of six beautifully photographed *Phaeocollybia* species (all accurately identified) with reference to 14 others!

Each section outlines its genera with their diagnostic characters. Individual species treatments each provide a color photo, Latin name and authority, often a "common" name (some actually common, the remainder useful inventions), and a formal technical description of cap, gills/other fertile surfaces, stipe, veil (including partial veil & volva), flesh, odor & taste, KOH or other chemical reactivity, spore deposit, and microscopic details (always spore shape & size; other diagnostic characters when helpful). Noting that the microcharacters provided are minimal, Siegel & Schwarz wryly observe: "There's still much to be learned about the range and significance of variation in microscopic features of mushrooms—our data are representative but not definitive. Please seek out measurements from other sources and tell us what you learn!" Each treatment is rounded out with information on ecology (more comprehensive than usually found in field guides), edibility, the all-important COMMENTS paragraph, and synonyms, misapplications, and other nomenclatural notes.

Each major species entry (1–2 per page) consists of a photo paired with text. The photography is stellar throughout, expecially noticeable in the introductory three large full-page plates and numerous half-page photos; the smaller (~1/6 page) photos accompanying most species descriptions appear equally clear, but fans (I am one) of the volume should consider also purchasing the online version so as to zoom these smaller photos for details not easily seen on the printed page. With no photographers credited (either by the photos or in the acknowledgments), we should assume that the two author-photographers deserve kudos for capturing so many fine photos in the field.

The authors have adopted Arora's (1986) term 'group' (e.g., *Lyophyllum decastes* group, *Xerocomus subtomentosus* group, *Scutellinia scutellata* group) and have introduced placeholder names (e.g., *Craterellus tubaeformis*, *Hygrocybe punicea*, *Russula cyanoxantha*, here all followed by 'sensu CA'), particularly useful when depicting taxa known to differ from their European sobriquets but which are yet to be described. [What made Arora's 'group' so wonderful for so many years is that it satisfied those anxious to name a specimen while simultaneously indicating that more research is needed to suss out the 'real' identification.] No doubt equally satisfying to the 'namers' among us is that the authors are not shy about providing provisional names by enclosing unpublished epithets (e.g., *Dendrocollybia "pycnoramella"*, *Leptonia "Ruby Grapefruit"*, *Xerocomellus "diffractus"*) and new combinations (*"Phaeoclavulina" myceliosa*, *"Gliophorus" flavifolius*, *"Xerocomellus" mendocinensis*) in quotation marks. Exceedingly helpful to the field mycologist, this also suggests a degree of nomenclatural trust on the part of Siegel & Schwarz that unethical competitors will not rush to publish the names ahead of them.

Regarding misapplications and synonomies, the authors note, "Californian mushrooms are often quite different in morphology, microscopic features, ecology, and genetics from their European namesakes, but until a new name is published, the most effective way of referring to them may be to use an epithet we know to be incorrect. We recommend taking a practical view of things: incorrect names will be used to convey information, and if they succeed in doing so without creating any new confusion, don't worry too much about it." Thus noting that *Cortinarius percomis* is a European name long misapplied for *C. citrinifolius*, *Neoalbatrellus* (*Albatrellus*) *caeruleoporus* is an eastern North American name misapplied for *N. subcaeruleoporus*, and *Lactarius vinaceorufescens & L. chrysorrheus* are both eastern North American names misapplied for *L. xanthogalactus* help link a familiar image and the new correct name together. Synonyms serve a similar function (e.g., *Atheniella adonis* ≡ *Mycena adonis; Lichenomphalia umbellifera* = *Omphalia ericetorum* [somewhat baffling to me, given that the US government's Northwest Forest Plan listed OMPHALINA *ericetorum*]; *Mycetinus copelandii* ≡ *Marasmius copelandii*, with a highly informative note citing recent genetic work that supports the species in *Gymnopus; Bolbitius titubans* = *B. vitellinus*). Some 'newer' names lack synonyms—the earlier placement of *Tapinella atrotomentosa* in *Paxillus* and *Annulohypoxylon thouarsianum* in *Sphaeria* are not noted—but such omissions are few. In general, I greatly appreciated finding so many 'hot-off-the-press' names with origins in multi-gene sequence analyses; these no doubt owe their presence in the volume to the careful review of Else Vellinga, whom Siegel & Schwarz thank first in their acknowledgments.

The volume closes with a list of future directions (mycofloristics, conservations, climate change, biogeography, systematics, sequence database quality, evolutionary and ecological synthesis), a 3-page glossary, resources for the mycophile, bibliography, general index, and genus & species index.

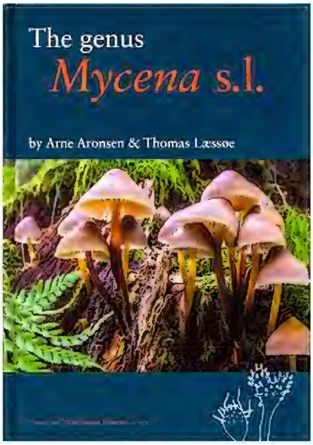
Overall the field guide is engagingly written and with understated humor highly appreciated here). I highly recommend this book.

Arora D. 1986. Mushrooms demystified (2nd edn.). Ten Speed Press, Berkeley CA. 959 p.

Trudell S, Ammirati J. 2009. Mushrooms of the Pacific Northwest. Timber Press, Portland OR. 351 p.

Desjardin DE, Wood MG, Stevens FA. 2015. Timber Press, Portland OR. 560 p.

BASIDIOMYCETES



Fungi of Northern Europe—Vol. 5. The genus *Mycena* s.l. By Arne Aronsen & Thomas Læssøe. 2016. Svampetryk <www.svampe.dk>, Narayana Press, Gylling, Denmark. 373 p. ~378 color photos, ~116 micro-drawings. ISBN 978-87-983581-2-1. Price (excl. postage): 450 kr. (375 kr. for Danish Mycological Society members).

How monographs have changed! Eighteen years ago I regularly labored far into the night over scores of *Mycena* collections while poring over microdrawings in my venerable Alexander Smith (1947), Maas Geesteranus (1992), Rexer (1994), and unpublished keys and notes shared by Scott Redhead and riffling through the far-too-few color plates in Breitenbach & Kränzlin (1991). Not until Robich (2003) landed on my library shelves did I have a full-color monograph dedicated to these beautiful agarics—and *Mycena* is a genus that wears its colors very well, indeed.

Aronsen & Læssøe's new volume is as beautiful as the mushrooms it depicts. Its size, large enough to be encyclopedic yet small enough to take to (if not into) the field (23 × 17 × 3 cm), and its durable hard cover surrounds semi-glossy easy-to-read glare-free pages bearing text and glossy photos that are especially sharp and clear. Photo credits, most often placed unobtrusively to the right of each photo, cite not only photographer and country but also collection number, a wonderful addition I've not noticed in other monographs. Of the 160 mycenas recorded from Europe, 115 are fully described here.

Authors who cover a genus in the broad sense must contend with when (or whether) to fit the nomenclature to taxonomic breakthroughs. As Aronsen & Læssøe note in their preface (written in May 2016), "It has become increasingly clear that *Mycena* is not a monophyletic entity, and we have thus chosen to title this volume *Mycena* sensu lato.... Most taxa have been accepted or left within the genus *Mycena* but the two satellite genera, *Roridomyces* [Rexer 1994] and *Resinomycena* [Redhead & Singer 1981] have become more or less well established and are also ad interim recognized here, whilst newer introductions such as *Atheniella* (for *M. adonis* a.o.) [Redhead 2012] and *Phloeomana* (for *M. speirea* a.o.) [Redhead 2013] have not been formally recognized in this book, although we accept that the genus *Mycena* as here circumscribed will have to be split. The old generic name *Prunulus,* reintroduced by Redhead & co-workers for *Mycena* sect. *Calodontes,* is likewise not treated as an independent genus in this treatment." In their historical recapitulation, the authors also draw attention to the on-going battle between lumpers and splitters: ["... unlike Kühner (1923), Singer (1938)] excluded some of the inamyloid species, and transferred them to his newly erected genus *Hemimycena*.... He, likewise, transferred another group of species (mainly with huge pleuro- and cheilocystidia and ± ornamented spores to the genus *Mycenella.* He was in other words a splitter, while Kühner tended to be a lumper. In the era we live in now, the splitters are having the upper hand..... Within the temperate world of the Northern Hemisphere the baton was taken over by Rudolph Arnold Maas Geesteranus.... Although he rarely worked with living specimens, he, nevertheless, produced a monumental and long lasting monograph. He excluded *Mycena rorida* from the genus mainly based on the structure of the pileipellis, and Rexer (1994) erected the genus *Roridomyces* to accommodate this and six other species. Another deviating *Mycena,* known under a host of names ... was also excluded by Maas Geesteranus and accepted as *Resinomycena saccharifera....*"

In their later discussion on phylogeny, the authors offer further generic insights: "...it has become clear that *Mycena* as understood by Kühner, Singer, and Maas Geesteranus ... is polyphyletic. Unfortunately, various efforts have not so far [led] to a paper that provides a useful overview of the phylogenetic position of the taxa that are and once were accepted within the genus. Early poorly resolved trees have been used to create two new genera, and one old genus has been accepted by some. ... *Atheniella* for e.g. *M. adonis* and *Phloeomana* for *M. speirea* were created by Redhead and collaborators (Redhead 2012) in a very brief contribution. Redhead (2016a, b, c), equally brief, added four more species to *Phloeomana* ... and in Gminder (2016) another *Atheniella* was added. It will be interesting to see whether a situation that parallels that seen in *Boletus* s.l.—hyper splitting—will be the trend in mycenoid fungi. In this context we have had to be conservative since no good phylogenetic trees are publicly available." In part, these comments address a controversy revolving around the recent trend toward exceedingly brief publications that fulfill the letter of the International Code of Nomenclature, if not the spirit, by presenting a name, diagnosis, holotype, and relatively little discussion placing the new taxon in context. While I remain at heart a splitter (finding smaller monophyletic genera easier to master than larger polyphyletic ones), this move toward minimalist publishing is hardly helpful. Unfortunately additional sequence analyses or other as-yet untapped scientific innovations are unlikely to settle the splitter vs. lumper controversy. When it comes down to it, taxonomy seems always to remain a matter of opinion.

The formal introduction and a brief paragraph on (very) basic materials and methods (noting that the names used more or less agree with those accepted by Index Fungorum and MycoBank) are followed by 23 pages devoted to "The genus *Mycena* s.l." This chapter lists accepted generic synonyms followed by a generic description. Macroscopic features are accompanied by stunning detailed photos of ephemeral characters (including one of the best photos of a separable elastic gill thread I've seen) and the discussion of important microscopic features includes sketches of cheilocystidial types (p. 19) and pileipellis types and setae. [Drawings throughout the book are elegantly minimalist but get the job done.] "Ecology and habitat" pairs six pages of excellent plates of representative species with habitats (e.g., *M. chlorantha* in dunes, *M. aetites* on lawns, *M. clavicularis* in pine forests). Brief paragraphs on conservation, seasonality, and development (one sentence referring to Rexer's thesis), cytology & culture studies, bioluminescence, toxicity, and parasites, and phylogeny (see above) follow.

Next comes a brief discussion of systematic arrangement & species concepts and a list of the 32 sections (with species covered), both according to Maas G.

Particularly helpful are the six pages of photos and brief descriptions of genera often confused with *Mycena*. Discussed here are two covered in the volume (*Resinomyces, Roridomyces*) and 26 others not included (*Arrhenia, Baeospora, Blasiphalia, Chromosera, Chrysomphalina, Collybia, Contumyces, Delicatula, Dendrocollybia, Fayodia, Gamundia, Gyroflexus/Sphagnomphalia, Hemimycena, Hydropus, Hygroaster, Lichenomphalia, Loreleia, Marasmiellus, Mycenella, Omphalina, Pseudobaeospora, Rickenella, Sphagnurus, Strobilurus,* and *Xeromphalina*).

Three dichotomous keys (all needed) are presented: [1] keys to mycenoid genera & species (4 pages), [2] a macro-based key further divided into Keys A–K (18 pages), and [3] a micro-based key (12 pages), where an entry key allocating 5 species also provides leads to Keys I–III. Although I would not have presented the spore Q >1.2 vs Q <1.2 as the first couplet in Key I, I am loath to criticize any key that has not been personally tested in the field and lab. These dichotomous keys are augmented by an extremely helpful synoptic key to mycenas sorted by habitat/substrate types.

The 115 species treatments comprising the bulk of the volume (pp. 78–333) do not disappoint. The accepted taxonomic name and nomenclator (followed by basionyms, synonyms, and misapplications) stand at the top of each first page above a 2–3 line diagnosis. A complete technical description, ecology & distribution data, and discussion follow. The text is accompanied by 2–5 excellent photos (most in situ, but often shown with a plate (taken with macro-lens or dissecting microscope) detailing characters that might otherwise be missed. *Mycena mitis,* a rare mushroom not captured fresh in the field, is represented by a painting and line drawing. While the line drawings are rather small and definitely not as detailed or elaborate as those found in Smith (1947), Rexer (1994, who helpfully grouped elements), Maas G. (1992), and Robich (2003, by far the most intricately rendered), those in Aronsen & Læssøe seem somehow more accessible and less likely to confuse. Two species also offer a table or list comparing two look-alikes (e.g., *M. polygramma* vs. *M. vitilis, M. filopes* vs. *M. metata*), which I found particularly helpful.

Two new species, fully treated on pages 220–221 (*M. pasvikensis*) and 270–271 (*M. mucoroides*), are also formally published on p. 334, accompanied by the required MycoBank (& GenBank) numbers, etymology, diagnosis, and type information. A note on the messy nomenclature surrounding *M. rosea* nom. illeg. shows Bulliard's plate used by Maas G. to lectotypify the species with Bulliard as author. The taxonomic treatments conclude with comments on 47 taxa not treated in the main text, 11 rejected names, 19 dubious taxa, 4 extralimital taxa, 37 excluded taxa now transferred to other genera, and one 'misinterpretation.' References and a taxonomic index round out the volume.

Its stunning sharp yet luminous photos, uncluttered elegant design, and wealth of information make THE GENUS *MYCENA* S.L. a joy to own, read, and use. A reliable reference that is simultaneously striking and restful fosters the illusion that the reader should easily be able to master the genus with no problem—an illusion that will keep many of us soldiering on. I highly advise everyone intrigued by these beautiful delicate agarics (and isn't that everyone?) to add this volume to their libraries. You won't regret it.

Breitenbach J, Kränzlin F. 1991. Fungi of Switzerland 3. Verlag Mycologia, Lucerne. 361 pp., 349 col. ill.

Gminder A. 2016. Nomenclatural novelties. Index Fungorum 302: 1.

Kühner R. 1938. Le genre *Mycena.* Encyclopédie mycologique X. P. Lechevalier, Paris. 710 pp. (in French)

Maas Geesteranus, R.A. 1992. Mycenas of the northern hemisphere. I. Studies in Mycenas and other papers. 391 pp.; II. Conspectus of the mycenas of the northern hemisphere. 493 pp.; Koninklijke Nederlandse Akademie van Wetenschappen verhandelingen, afd. Natuurkunde, Amsterdam.

Redhead SA. 2012. Nomenclatural novelties. Index Fungorum 14: 1.

Redhead SA. 2013. Nomenclatural novelties. Index Fungorum 15: 2.

Redhead SA. 2016a. Nomenclatural novelties. Index Fungorum 289: 1.

Redhead SA. 2016b. Nomenclatural novelties. Index Fungorum 290: 1

Redhead SA. 2016c. Nomenclatural novelties. Index Fungorum 291: 1

Redhead SA, Singer R. 1981. *Resinomycena* gen. nov. (*Agaricales*), an ally of *Hydropus, Mycena* and *Baeospora.* Mycotaxon 13: 150–170.

Rexer K-H. 1994. Die Gattung *Mycena* s.l. Studien zu ihrer Anatomie, Morphologie und Systematik. PhD dissertation, Fakultät für Biologie der Eberhard-Karls-Universität Tübingen. 318 pp. (in German)

Robich, Giovanni. 2003. *Mycena* d'Europa. A.M.B. Fondazione Centro Studi Micologici, Trento, Italy. 728 p. (in Italian)

Smith, Alexander H. 1947. North American species of *Mycena.* University of Michigan Press, Ann Arbor. 521 p.